

No.

8200063



# THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

**Holden's Foundation Seeds, Inc.**

Whereas, THERE HAS BEEN PRESENTED TO THE

**Secretary of Agriculture**

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THEREOF IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF *eighteen* YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT OF 1930, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

CORN

'LH74'



In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington this 26th day of May in the year of our Lord one thousand nine hundred and eighty-three.

Attest:

*Kenneth H. Evans*  
Acting  
Commissioner  
Plant Variety Protection Office  
Grain Division  
Agricultural Marketing Service

*John R. Block*  
Secretary of Agriculture

No certificate for plant variety protection may  
be issued unless a completed application form  
has been received (5 U.S.C. 553).

## APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

INSTRUCTIONS: See Reverse.

1a. TEMPORARY DESIGNATION OF VARIETY Ex449		1b. VARIETY NAME LH74		FOR OFFICIAL USE ONLY PV NUMBER 8200063	
2. KIND NAME Yellow dent corn		3. GENUS AND SPECIES NAME Zea Mays		FILING DATE 1/20/82	
4. FAMILY NAME (BOTANICAL) Gramineae		5. DATE OF DETERMINATION April, 1980		TIME 12:30 P.M.	
6. NAME OF APPLICANT(S) Holden's Foundation Seeds, Inc.		7. ADDRESS (Street and No. or R.F.D. No., City, State, and ZIP Code) Box 839, R.R. 2 Williamsburg, Iowa 52361n		FEE RECEIVED \$ 500.00 \$ 250.00	
8. TELEPHONE AREA CODE AND NUMBER 319-668-1100		9. IF THE NAMED APPLICANT IS NOT A PERSON, FORM OF ORGANIZATION: (Corporation, partnership, association, etc.) Corporation		10. IF INCORPORATED, GIVE STATE AND DATE OF INCORPORATION Iowa	
11. DATE OF INCORPORATION 1968		12. NAME AND MAILING ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS: Mr. Art L. Johnson, Box 839, Williamsburg, Iowa 52361		13. CHECK BOX BELOW FOR EACH ATTACHMENT SUBMITTED: <input type="checkbox"/> 13A. Exhibit A, Origin and Breeding History of the Variety (See Section 52 of the Plant Variety Protection Act.) <input type="checkbox"/> 13B. Exhibit B, Novelty Statement. <input type="checkbox"/> 13C. Exhibit C, Objective Description of the Variety (Request form from Plant Variety Protection Office.) <input type="checkbox"/> 13D. Exhibit D, Additional Description of the Variety.	

14a. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEE D7 (See Section 83(a).) (If "Yes," answer 14B ad 14C below.) c 1 YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>		14b. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? a YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>		14c. IF "YES," TO 14B, HOW MANY GENERATIONS OF PRODUCTION BEYOND BREEDER SEED? <input type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input type="checkbox"/> CERTIFIED	
15a. DID THE APPLICANT(S) FILE FOR PROTECTION OF THIS VARIETY IN OTHER COUNTRIES? name of countries and dates.) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO (If "Yes," give		16a. HAVE RIGHTS BEEN GRANTED THIS VARIETY IN OTHER COUNTRIES? and dates.) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO (If "Yes," give name of countries		16b. DOES THE APPLICANT(S) AGREE TO THE PUBLICATION OF HIS/HER (THEIR) NAME(S) AND ADDRESS IN THE OFFICIAL JOURNAL? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	
17. The applicant(s) declare(s) that a viable ample of basic seed of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable. The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Act. Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties. DECEMBER 23, 1981 (DATE) NLS PER LETTER OF 8/6/82 (SIGNATURE OF APPLICANT)					

## Exhibit A

## LH74

## Origin and Breeding History

LH74 is an inbred developed through a pedigreed breeding system. The originating cross was between A632 (University of Minnesota release) and B73 (Iowa State University release).

Item I is a schematic outline for the development of LH74, nursery row numbers, nursery locations, and year in which the progeny rows were grown are given.

Attached to Item I are copies of Holden's Foundation Seeds nursery books. Rows involved in the development of LH74 have been underscored.

Progeny from self-pollinated seed of LH74 are very uniform. Off-types occurring in the population have been attributed to outcrosses. These outcrosses grow more rapidly, are usually darker green, and have a larger tassel.

LH74 has been self-pollinated ear to row an adequate number of generations to be stable and uniform. Both field and ear inspections by the Iowa Crop Improvement Association in 1981 have been approved for certification of LH74, therefore indicating its uniformity of plant and ear type. Attached is a copy of those reports.

## Item I

LH74=Ex449=A632 x B73=Selection I79-7812

<u>Nursery Row No.</u>		<u>Location</u>	<u>Year</u>
2829	A632 x B73	Iowa	1974
5560	A632 x B73 <sub>Q1</sub>	Iowa	1975
755	A632 x B73 <sub>Q2</sub>	Iowa	1976
1896	A632 x B73 <sub>Q3</sub>	Iowa	1977
5067	A632 x B73 <sub>Q4</sub>	Hawaii	1977-78
5677	A632 x B73 <sub>Q5</sub>	Iowa	1978
5605	A632 x B73 <sub>Q6</sub>	Hawaii	1978-79
7812	A632 x B73 <sub>Q7</sub>	Iowa	1979

Corn Sorghum

8200063

## Foundation Inbred Lines and/or Single Crosses

## APPLICATION FOR CERTIFICATION

FIELD NO. 21Name of Applicant Holden Foundation Seed Inc County Where Applicant Lives IowaAddress Box 839 County Where Field is Located Iowa  
P. O. Box, Street or R.R.Williamsburg Iowa 52361 319 / 668-1100  
City State Zip Code Area Code/TelephoneCrop: (check one) Corn ☒ Sorghum ☐ Crop Year 1981

Send this completed application form and the certification fee to the Iowa Crop Improvement Association, Ames, Iowa. See "Certification Requirements" for amount of fee and make checks payable to the Iowa Crop Improvement Association. A separate application is required for each field. The closing date for applying for certification is June 1.

PEDI GREE	ACRES	PLANTING DATE	SOURCE OF SEEDSTOCKS PLANTED*		REMARKS**
			Cert. Lot No.	Grown By	
POLLEN PARENT:					
1. <u>LH 74</u>	<u>12.48</u>	<u>April</u>	<u>27</u>	<u>H. F. S</u>	(b)(1) <u>H. F. S - 1980</u> (2) <u>ve s</u>
SEED PARENT:					
1. <u>M017 VGms Ht</u>	<u>.7</u>	<u>April 27</u>	<u>H. F. S</u>	<u>H. F. S</u>	<u>For inspection only</u>
2. <u>M017 Ht</u>	<u>.33</u>	<u>April 27</u>	<u>H. F. S</u>	<u>H. F. S</u>	<u>For inspection only</u>
3. <u>LH 51</u>	<u>.6</u>	<u>April 27</u>	<u>H. F. S</u>	<u>H. F. S</u>	<u>For inspection only</u>
4. <u>LH 58</u>	<u>.26</u>	<u>April 27</u>	<u>H. F. S</u>	<u>H. F. S</u>	<u>For inspection only</u>
5. <u>LH 58 VGms</u>	<u>.33</u>	<u>April 27</u>	<u>H. F. S</u>	<u>H. F. S</u>	<u>For inspection only</u>
6. _____	_____	_____	_____	_____	_____

PLANTING RATIO: SEED 4 ROWS 2 TO POLLEN ROWS ROW WIDTH 3 a "☒ Check here if this is a Time Isolation inbred increase,☐ Check here if this production is by Hand Pollination.

## \*SEEDSTOCK PLANTED:

(a) For Certified Seedstocks:

Attach one certification tag taken from each lot of seed planted in this field. Indicate the field number and bushels or pounds planted on each tag.

(b) Complete only for UNCERTIFIED Seedstocks:

- (1) Originator See Remarks
- (2) Does the inbred meet the definition of an inbred as outlined in the Certification Requirements? Yes ☐ No ☒
- (3) If you are not the originator, provide proof that the seed is eligible as outlined in the Certification Requirements.

\*\* Indicate if "For Inspection Only"

FIELD INSPECTION REPORT

Applicant HOLDEN'S ADDRESS \_\_\_\_\_  
Field Identity LH 74 21  
POLLEN PARENT CROP FIELD NO.  
Date 8/4 | A.M. P.M.  
Time

Your attention is called to the following conditions in the above described field.

POLLEN PARENT

Plants shedding pollen 100 %  
Off-type plants shedding pollen 0 %

SEED PARENT

% Plants ↓	Pedigree					
	LH 74	LH 75	LH 76	LH 77	LH 78	LH 79
Shedding Pollen	100	0	0	0	0	0
Receptive to Pollen	95+					
Off-type	0	0	0	0	0	0
Off-type & Shedding Pollen	0	0	0	0	0	0

REMARKS:

FINAL INSPECTION  
FIELD LOOKS GOOD, ISOL OK

GROWER'S COPY

Inspector

3-79-10M

8200063

Pollinator LH 74 - Early

Pollinator

Date	Dryer	Bin	Pedigree	Bushels	Inspection Results	Inspector
9/21	3	30-29-28 27-26-25 24-23-22	LH 74 Blend	650	Passed 9/21/81	<del>WDE</del>

Females

[illegible]

Supplement to Exhibit A

Corn Application No. 8200063, 'LH74'

LH74 is very stable and uniform. Either self-pollination or sib mating will maintain the identity of LH74 very well.

LH74 has been increased three generations since the line development process was completed in 1979. Each increase generation is carefully scrutinized for uniformity.

Supplement to Exhibit A

Corn Application #8200063 'LH74'

There are no variants in LH74 inbred.

## Exhibit B

LH74 most closely resembles A632Ht; however, at flowering A632Ht's leaves are horizontal whereas LH74's leaves are upright with only the end one-third of the leaf broken over.

Photo 1 illustrates LH74's upright leaf, and Photo 2 shows A632Ht's flat leaf angle. Photo 3 compares A632Ht on the left and LH74 on the right.



Photo 1

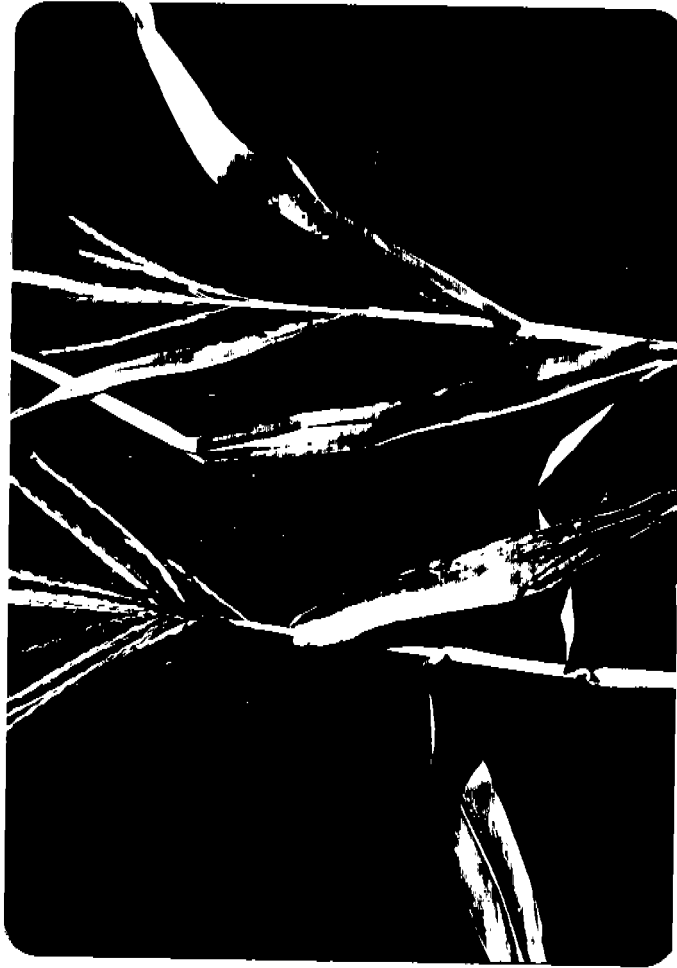


Photo 3

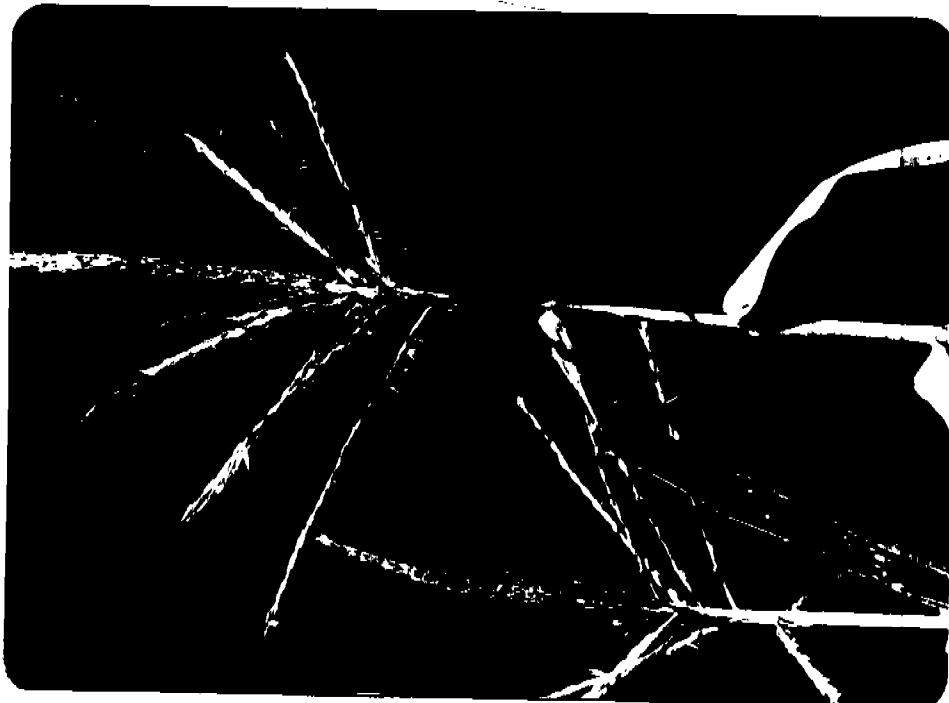


Photo 2

U.S. DEPARTMENT OF AGRICULTURE  
**AGRICULTURAL MARKETING SERVICE**  
 LIVESTOCK, POULTRY, GRAIN & SEED DIVISION  
 BELTSVILLE, MARYLAND 20706

**EXHIBIT C**  
 (Corn)

**OBJECTIVE DESCRIPTION OF VARIETY**

CORN (ZEA MA YS)

NAME OF APPLICANT(S) Holden's Foundation Seeds, Inc.	FOR OFFICIAL USE ONLY P VPO NUMBER 8200063
ADDRESS (Street and No. or R.F.D. No., City, State, and ZIP Code) Box 839 Williamsburg, Iowa 52361	VARIETY NAME OR TEMPORARY DESIGNATION LH 74

Place the appropriate number that describes the varietal character of this variety in the boxes below.  
 Place a zero in first box (e.g., 099 or 09) when number is either 99 or less or 9 or less.

1. TYPE:

2

1 = SWEET 2 = DENT 3 = FLINT 4 = FLOUR 5 = POP 6 = ORNAMENTAL

2. REGION WHERE BEST ADAPTED IN THE U.S.A.:

2

1 = NORTHWEST 2 = NORTHCENTRAL 3 = NORTHEAST 4 = SOUTHEAST  
 5 = SOUTHWEST 6 = MOST REGIONS

3. MATURITY (In Region of Best Adaptability):

61

DAYS FROM EMERGENCE TO 60% OF PLANTS IN SILK

DAYS FROM 50% SILK TO OPTIMUM EDIBLE QUALITY

83

DAYS FROM 50% SILK TO HARVEST AT 25% KERNEL MOISTURE

(Under "comments" (pg. 3) state how heat units were calculated)

HEAT 304 N4

H E A T U

1 2 7 1

HEAT UNITS

4. PLANT:

189

CM. HEIGHT (To tassel tip)

072

CM. EAR HEIGHT (To base of top ear)

10

CM. LENGTH OF TOP EAR INTERNODE

Number of Tillers:

2

1 = NONE

2 = 1-2

3 = 2-3

4 = > 3

Number of Ears Per Stalk:

1 = SINGLE

2 = SLIGHT TWO-EAR TENDENCY

3 = STRONG TWO-EAR TENDENCY 4 = THREE-EAR TENDENCY

Cytoplasm Type:

1

1 = NORMAL

2 = "T"

3 = "S"

4 = "C"

5 = OTHER (Specify)

5. LEAF (Field Corn Inbred Examples Given):

Color:

2

1 = LIGHT GREEN (HY)

2 = MEDIUM GREEN (WF9)

3 = DARK GREEN (B14)

4 = VERY DARK GREEN (K166)

Angle from Stalk (Upper half):

1

1 = < 30°

2 = 30-60°

3 = > 60°

Sheath Pubescence:

2

1 = LIGHT (W22)

2 = MEDIUM (WF9)

3 = HEAVY (OH26)

Marginal Waves:

1

1 = NONE (HY)

2 = FEW (WF9)

3 = MANY (OH7L)

Longitudinal Creases:

2

1 = ABSENT (OH51)

2 = FEW (OH56A)

3 = MANY (PA11)

Width:

08

CM. WIDEST POINT OF EAR NODE LEAF

Length:

080

CM. EAR NODE LEAF

12

NUMBER OF LEAVES PER MATURE PLANT

## 8. TASSEL:

07

NUMBER OF LATERAL BRANCHES

Branch Angle from Central Spike:

c 2

1 =  $< 30^\circ$ 2 =  $30-40^\circ$ 3 =  $> 45^\circ$ 

Penduncle Length:

06

CM. FROM TOP LEAF TO BASAL BRANCHES

Pollen Shed:

2

1

1 = LIGHT (WF9)

2 = MEDIUM

3 = HEAVY (KY21)

a 4

4

Anther Color:

1 = YELLOW

2 = PINK

3 = RED

4 = PURPLE

5 = GREEN

Glume Color:

6 = OTHER (Specify) \_\_\_\_\_

Pollen Restoration for Cytoplasm (0 = Not Tested, 1 = Partial, 2 = Good)

c 0

"T"

a 1

"S"

c 1

"C"

c 1

OTHER (Specify Cytoplasm and degrees of restoration) \_\_\_\_\_

## 7. EAR (Husked Ear Data Except When Stated Otherwise):

m

CM LENGTH

38

MM. MID-POINT  
DIAMETER

92

GM. WEIGHT

Kernel Rows:

c 2

1 = INDISTINCT

2 = DISTINCT

14

NUMBER

c 1

1 = STRAIGHT

2 = SLIGHTLY CURVED

3 = SPIRAL

Silk Color (Exposed at Silking Stage):

c 1

1 = GREEN

2 = PINK

3 = SALMON

4 = RED

Husk Color:

c 2

FRESH

1 = LIGHT GREEN

2 = DARK GREEN

3 = PINK

a 6

DRY

4 = RED

5 = PURPLE

6 = BUFF

Husk Extmtion: (Harvest Stage)

Husk Leaf:

c 2

1 = SHORT (Ears Exposed) 2 = MEDIUM (Barely Covering Ear)

3 = LONG (8-10CM Beyond Ear Tip)

4 = VERY LONG ( $> 10$  CM)

c 2

1 = SHORT ( $< 8$  CM)

2 = MEDIUM (8-15 CM)

3 = LONG ( $> 15$  CM)

Shank:

Position at Drv Husk Stags:

08

CM LONG

7

NO. OF INTERNODES

c 1

1 = UPRIGHT

2 = HORIZONTAL

3 = PENDENT

Taper:

Drying Time (Unhusked Ear):

c 1

1 = SLIGHT

2 = AVERAGE

3 = EXTREME

c 3

1 = SLOW

2 = AVERAGE

3 = FAST

## 8. KERNEL (Dried):

Site (From Ear Mid-Point):

10

MM LONG

08

MM. WIDE

05

MM. THICK

Shape Grade (% Rounds)

a 5

1 =  $< 20$ 

2 = 20-40

3 = 40-60

4 = 60-80

5 =  $> 80$

## 8. KERNEL (Dried) :

8200063

1

Pericarp color:

1 ■ COLORLESS

2 ■ RED-WHITE CROWN

3 ■ TAN

4 ■ BRONZE

5 ■ BROWN

6 ■ LIGHT RED

7 ■ CHERRY RED

8 ■ VARIEGATED (Describe) \_\_\_\_\_

1

Aleurone Color:

1 ■ HOMOZYGOUS

2 ■ SEGREGATING (Describe) \_\_\_\_\_

1

1 ■ WHITE

2 ■ PINK

B-TAN

4

BROWN

5 ■ BRONZE

6 ■ RED

7 ■ PURPLE

8 ■ PALE PURPLE

9 ■ VARIEGATED (Describe) \_\_\_\_\_

3

Endosperm Color:

1 ■ WHITE

2 ■ PALE YELLOW

3 ■ YELLOW

4 ■ PINK-ORANGE

5 ■ WHITE CAP.

Endosperm Type:

a 3

1 ■ SWEET (su1)

2 ■ EXTRA SWEET (sh2)

3 ■ NORMAL STARCH

4 ■ HIGH AMYLOSE STARCH

5 ■ WAXY STARCH

6 ■ HIGH PROTEIN

7 ■ HIGH LYSINE

8 ■ OTHER (Specify) \_\_\_\_\_

2 4

GM. WEIGHT /100 SEEDS (Unsize Sample)

## 9. MOBS:

m

2.9 MM. DIAMETER AT MID-POINT

2

Length:

I-WEAK

2

=

STRONG

Color:

3

1 ■ WHITE

2 ■ PINK

3 ■ RED

4 ■ BROWN

6 VARIEGATED 6 OTHER (Specify) \_\_\_\_\_

## 10. DISEASE RESISTANCE (0 = Not Tested, 1 = Susceptible, 2 = Resistant):

0

STALK ROT (Diplodia)

0

STALK ROT (Fusarium)

a 0

STALK ROT (Gibberella)

1

NORTHERN LEAF BLIGHT

1

SOUTHERN LEAF BLIGHT

0

SMUT

0

SOUTHERN RUST

1

0

C

CORN SMUT

a 0

BACTERIAL WILT

a 0

BACTERIAL LEAF BLIGHT

0

MAIZE DWARF MOSAIC

c 0

STUNT

I a

OTHER (Specify) \_\_\_\_\_

## 11. INSECT RESISTANT (0 = Not Tested, 1 = Susceptible, 2 = Resistant):

0

CORNBORER

a 0

EARWORM

0

SAPBEETLE

0

APHID

0

ROOTWORM (Northern)

a 0

ROOTWORM (Western)

c 0

ROOTWORM (Southern)

c 0

OTHER (Specify) \_\_\_\_\_

## 12. VARIETIES MOST CLOSELY RESEMBLING THAT SUBMITTED FOR THE SIMILARITY GIVEN:

CHARACTER	VARIETY	CHARACTER	VARIETY
Maturity	A632Ht	Kernel Type	A632Ht
Plant Type	B73Ht	Quality (Edible)	--
Ear Type	A632Ht	Usage	A632Ht

## REFERENCES:

U.S. Department Agriculture. Yearbook 1937.

Corn: Culture, Processing, Products. 1970 Avi Publishing Company, Westport, Connecticut. (Numerous Authors)

Emerson, R.A., G.W. Beadle, and A.C. Fraser. A Summary of Linkage Studies in Maize. Cornell A.E.S., Mem. 190. 1935

The Mutants of Maize, 1968. Crop Science Society of America, Madison, Wisconsin.

Stringfield, G.H. Maize Inbred Lines of Ohio. Ohio A.E.S. Bul. 831. 1959.

Butler, D.R. 1954. A System for the Classification of Corn Inbred Lines. PhD. Thesis, Ohio State University.

## COMMENTS:

Heat Units=  $\frac{\text{Hi Temp} - 86^\circ \text{F} + \text{Low Temp} - 50^\circ \text{F}}{\text{Days}}$  -50

2

## Exhibit D

LH74 very greatly resembles A632Ht. LH74 will pollinate at the same time as A632Ht; however, LH74 most generally has silks present before pollen is shedding. Therefore, the silk date is 3-4 days earlier than the silk date of A632Ht.

LH74's plant height is only a few centimeters taller than A632Ht's. Ear height is the same as A632Ht.

Open pollinated seed set of LH74 is much better than that of A632Ht.

LH74 is darker green than A632Ht and comes closer to the color of B73Ht.

The tassel of LH74 is smaller than that of A632Ht. The size generally resembles B73Ht, but the branches relax at anthesis like A632Ht whereas the branches of B73Ht stay erect.

The leaf angle of LH74 is most like that of B73Ht.